Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector | **Vol. 14 No. 5** | **May 2011**

This Month's Question of the Month – Grounded DC photovoltaic arrays shall be provided with _____ to reduce fire hazards. A) flame-proof support structures, B) high temperature-limiting switches, C) arc-fault protection, D) DC ground-fault protection – *See the correct answer on page 2.*

Safety Tip of the Month!

CPSC, National Electrical Safety Foundation Urge Consumers to Plug Into Electrical Safety

The U.S. Consumer Product Safety Commission (CPSC) and the National Electrical Safety Foundation (NESF) are urging consumers to look for and correct electrical safety hazards in their homes this May as part of National Electrical Safety Month.

Note From The Chief

The Electrical Program is embarking on a long-term plan to become even more efficient and effective. We will be using the Toyota Production System's LEAN process to eliminate waste and standardize our processes. LEAN is a set of concepts, principles, and tools used to create and deliver the most value while consuming the fewest resources. Why LEAN? L&I's goal is to engage all program staff in continuous improvement to achieve the best quality, the shortest lead time, the lowest cost, the best safety, and the highest morale. LEAN has proven to achieve results.

LEAN addresses problems at the systems level and within individual processes. Customer needs define value for the process. LEAN distinguishes steps that create value from those that do not. It reduces waste and builds in quality. LEAN is a systematic problem solving method that is where successes and failures can be evaluated and documented. Using LEAN means successes can be repeated and implemented on a statewide basis.

Inspectors in the Everett and Tukwila offices have teamed together to create this new culture within the Electrical Program. For them, there are three primary areas of focus:

- Improving our response times for our inspections,
- Focusing our compliance efforts on the underground economy and contractors that do not get electrical inspections, and
- Improving the quality of our compliance efforts.

The results of their efforts will be implemented across the state next winter. As a result, our customers will see better and more consistent overall service and a reduction in the negative impacts of the underground economy.

A LEAN culture is based upon continuous improvement and respect for people. We will continue to challenge ourselves to provide a better product with less waste. This aligns with L&I's mission of *Keeping Washington Safe & Working* by providing safety, service, and value.

WAC Rule Change – Trainee Education Requirements

Beginning July 1st, all trainees seeking to renew their training certificate must have completed 32 hours of electrical trainee classroom education. On July 1, 2013, renewals will require 48 hours of classroom time. This legislation passed in the 2010 legislative session. There are no alternatives to having the required training.

Electrical Board

The Electrical Board has lost 33 years of board experience. Gloria Ashford - Chair, Jim Simmons – Vice Chair, and David Bowman are all ending their third terms on the board. They have each served as your representatives for eleven years. Each has been a great asset to the board and the electrical industry. They will all be greatly missed. Their years of service have shown them to be leaders in state service and the electrical industry.

No Access For Inspection

By far, the number one correction issued by electrical inspectors continues to be for no access to do the inspection. There are several things to remember when a contractor talks with their customers and requests inspections. The best way to request an inspection is by using L&I's on-line inspection request system. The

request will be downloaded by the inspector the next morning and placed in the inspector's queue for inspection. Statewide, 89% of inspections are made within 48 hours. Longer delays may happen with sudden upswings in inspection requests or in remote areas.

Especially in occupied buildings, the contractor must ensure the customer is aware of the requirement for inspections and the need to work with L&I's inspectors in scheduling inspections. This can be accomplished in several ways. Many contractors provide the customer a flyer that details the requirement for inspection, the customer's responsibility to help to ensure the inspection is made, and that the customer will be held accountable if they block inspection access or fail to help the inspector to make the inspection happen.

If the contractor enters a comment in the on-line system asking the inspector to arrange access prior to making the inspection, the inspector will make two calls to the customer asking for a call back. If the customer fails to call back, the inspector will go to the site in an attempt to make the inspection. If the customer is available, the inspection will be made. If not, the inspector will leave a *No Access* door hanger and asses the contractor a trip fee. The responsibility for arranging access is then shifted back to the contractor. The contractor must work with the customer to ensure the inspector can gain access to make the inspection.

Many contractors immediately send the customer a certified letter or other confirmed method informing the customer that if they fail to communicate with the inspector and arrange the inspection they will be accountable – possible loss of power, citation, etc. The contractor should talk with the local inspection supervisor and communicate all actions being taken to ensure that the inspection will be made. If the contractor makes a good faith effort in arranging the inspection access, L&I will shift its focus to the customer in making the inspection happen. If the contractor is making every effort to arrange the inspection, additional fees and compliance action towards the contractor will likely be unnecessary.

Contractors should work with the local supervisor to help reduce the number of no access inspections. Eliminate the frustration and time and money wasted on these inspections. Once an inspection has been arranged with a customer, the inspector will do everything possible to make the inspection when it was arranged. If the inspector is delayed, for any reason, the inspector will make every effort to contact the customer as soon as possible to explain the situation and make other arrangements.

- **Photovoltaic Fees**

For electrical permit fee purposes, photo voltaic (PV) systems should be considered a generator. WAC 296-46B-906(5)(g) tells you to use the appropriate residential or commercial new service or feeder section to calculate the fees for a permanent generator. Each direct current PV system has at least one inverter. For fee calculation, the output rating of the largest inverter will determine the initial feeder size. Each additional inverter will be considered an additional feeder when calculating the total fee.

When micro inverters, 500 watts or smaller, are connected together and supply a single output circuit, the entire micro inverter circuit will be considered as one feeder. Additional circuits supplied by micro inverters will be considered to be separate feeders.

When an overcurrent device or panelboard (e.g. circuit breaker, combiner panel, etc.), rated 30 amperes or larger, is on the input side of an inverter, the device's/panel's output wiring will also be considered to be a feeder.

In a new residence: For a PV system with three inverters with an output rating from 0 to 200 amperes, the fee for the PV system will be $148.80 (i.e. $93.40 for the first inverter and $27.70 for each of the two remaining inverters).

In a new nonresidential installation: For a PV system with three inverters with each having an output rating from 0 to 100 amperes and a DC combiner with an overcurrent device rated 50 amperes, the fee for the PV system will be $264.70 (i.e. $93.40 for the first inverter and $57.10 for each of the two remaining inverters and $57.10 for the combiner overcurrent device).

- **Answer to This Month's Question of the Month:** D) DC ground-fault protection – NEC 690.5